

AMENDMENTS

Please amend the claims as follows.

1-51. (Canceled)

52. (Currently Amended) An apparatus for generating a mist comprising:

a housing having a plurality of interior walls, at least one of the plurality of interior walls defining a passageway along a longitudinal center axis, the passageway having a[[n]] transport fluid inlet, a plenum adjacent to the transport fluid inlet, a portion adjacent to the plenum, and an outlet, the at least one of the plurality of interior walls being continuously tapered outwardly with respect to the axis along the portion and the plenum adjacent to the transport fluid inlet being of different cross-sectional area than the transport fluid inlet at every point along the length of the plenum adjacent to the transport fluid inlet;

a protrusion with a solid interior located proximate the portion, the protrusion having an outer surface tapered outwardly with respect to the axis;

a means for generating a mist substantially of a desired droplet size from a working fluid with a transport fluid, the means including a transport nozzle and a working nozzle, the a transport nozzle being defined between: the at least one of the plurality of interior walls tapered outwardly with respect to the axis along the portion, and the outer surface tapered outwardly of the protrusion; a the working nozzle being defined by other of the plurality of interior walls of the housing, the working nozzle being coincident the transport nozzle so that a the working fluid communicated to and exiting the working nozzle mixes with a and the transport fluid communicated to and exiting the transport nozzle contact for the first time and mix; wherein the working nozzle is defined by a working nozzle outer surface facing inward toward the axis and a working nozzle inner surface facing outward away from the axis; wherein at least part of the working nozzle outer surface converges toward the axis in a direction along the axis toward the outlet; and

a working fluid inlet disposed along the housing in communication with the working nozzle;

~~wherein the working nozzle is defined by a working nozzle outer surface facing inward toward the axis and a working nozzle inner surface facing outward away from the axis; wherein at least part of the working nozzle outer surface converges toward the axis in a direction along the axis toward the outlet.~~

53. (Previously Presented) The apparatus of claim 52 further comprising a chamber adjacent the portion wherein the transport nozzle exits into the chamber and the working nozzle exits into the chamber so that the working fluid communicated to the working nozzle mixes in the chamber with the transport fluid exiting the transport nozzle.

54. (Currently Amended) An apparatus for generating a mist, the apparatus having an apparatus axis, the apparatus comprising:

a housing, and

a means for suppressing combustion with a mist, the means including:

a first fluid passage formed in the housing having a first fluid inlet and a first fluid outlet; the first fluid passage defining a working nozzle; the first fluid passage comprising a first annular portion concentric with the apparatus axis, the first annular portion having a first outer surface facing inward toward the apparatus axis and a first inner surface facing outward away from the apparatus axis; wherein at least part of the first outer surface converges toward the apparatus axis in a direction toward the first fluid outlet;

a second fluid passage formed in the housing having a second fluid inlet and a second fluid outlet;

a protrusion located in the second fluid passage to define an annular transport nozzle with a second inner surface facing outward away from the apparatus axis and a second outer surface facing inward toward the apparatus axis, that are both concentric with the apparatus axis and substantially frustoconical in shape, and wherein the second inner surface and the second outer surface both diverge away from the apparatus axis in the direction toward the second fluid outlet[[.]];

wherein the first fluid passage and second fluid passage are separate before the first fluid outlet and the second fluid outlet.

55. (Previously Presented) The apparatus of claim 54 further comprising a transport plenum within the apparatus and located in the second fluid passage between the second fluid inlet and the transport nozzle.
56. (Previously Presented) The apparatus of claim 55 wherein the transport plenum and the transport nozzle are arranged axially in the apparatus.
57. (Previously Presented) The apparatus of claim 55 wherein the transport plenum is concentric with the apparatus axis.
58. (Canceled)
59. (Canceled)
60. (Previously Presented) The apparatus of claim 54 further comprising a working fluid plenum within the apparatus and located in the first fluid passage between the first fluid inlet and the working nozzle, wherein the working fluid plenum is annular and circumscribes the apparatus axis.
61. (Previously Presented) The apparatus of claim 60 wherein the working fluid plenum substantially circumscribes the transport nozzle.
62. (Previously Presented) The apparatus of claim 60 wherein the working fluid plenum substantially circumscribes the protrusion.
63. (Previously Presented) The apparatus of claim 54, wherein the working nozzle has inner and outer surfaces at the first fluid outlet, each being substantially frustoconical in shape, wherein the inner surface of the working nozzle faces outward away from

the apparatus axis and the outer surface of the working nozzle faces inward toward the apparatus axis.

64. (Previously Presented) The apparatus of claim 54 wherein the working nozzle substantially circumscribes the transport nozzle.

65. (Previously Presented) The apparatus of claim 54 wherein the working nozzle substantially circumscribes the protrusion.

66. (Previously Presented) The apparatus of claim 54, wherein the internal geometry of the transport nozzle has an exit area to throat area ratio in the range of 1.75 to 15.

67. (Previously Presented) The apparatus of claim 54, wherein the transport nozzle has an included angle alpha (α) that is equal to or less than 6 degrees.

68. (Previously Presented) The apparatus of claim 54, further comprising within the apparatus a mixing chamber, wherein the first fluid outlet and the second fluid outlet are connected to the mixing chamber.

69. (Previously Presented) The apparatus of claim 54, wherein the transport nozzle has an included angle alpha (α) that is equal to or less than 12 degrees.

70. (Previously Presented) The apparatus of claim 54 wherein the transport nozzle is shaped with a convergent-divergent profile to provide supersonic flow of a transport fluid which flows therethrough.

71. (Previously Presented) A spray system comprising the apparatus of claim 54 and further including a steam generator and a water supply, wherein the transport fluid is steam and the working fluid is water.

72. (Previously Presented) A method of suppressing a fire comprising using the apparatus of claim 54 to spray water droplets on the fire.

73. (Previously Presented) An apparatus for generating a mist, the apparatus having an apparatus axis and an outlet end, the apparatus comprising:

a first fluid passage having a first fluid inlet and a first fluid outlet; the first fluid passage defining a first nozzle; the first fluid outlet being annular and concentric with the apparatus axis, the first fluid passage comprising a first annular portion concentric with the apparatus axis, the first annular portion having a first outer surface facing inward toward the apparatus axis and a first inner surface facing outward away from the apparatus axis; wherein at least part of the first outer surface converges toward the apparatus axis in a direction toward the outlet end;

a second fluid passage having a second fluid inlet and a second fluid outlet; the second fluid passage defining a second nozzle; the second fluid outlet being annular and concentric with the apparatus axis, the second fluid passage comprising a second annular portion concentric with the apparatus axis, the second annular portion having a second outer surface facing inward toward the apparatus axis and a second inner surface facing outward away from the apparatus axis; wherein at least part of the second outer surface diverges away from the apparatus axis in a direction toward the outlet end; and wherein at least part of the second inner surface diverges away from the apparatus axis in a direction toward the outlet end; and wherein the second fluid outlet is located between the first fluid outlet and the apparatus axis.

74. (Previously Presented) The apparatus of claim 73 further comprising a second fluid plenum within the apparatus and located in the second fluid passage between the second fluid inlet and the second nozzle.

75. (Previously Presented) The apparatus of claim 74 wherein the second fluid plenum and the second nozzle are arranged axially in the apparatus.

76. (Previously Presented) The apparatus of claim 74 wherein the second fluid plenum is concentric with the apparatus axis.

77. (Previously Presented) The apparatus of claim 74 wherein the second fluid inlet, the second fluid plenum, and the second nozzle are arranged axially in the apparatus.

78. (Cancelled)

79. (Previously Presented) The apparatus of claim 73 further comprising a first fluid plenum within the apparatus and located in the first fluid passage between the first fluid inlet and the first nozzle, wherein the first fluid plenum is annular and circumscribes the apparatus axis.

80. (Previously Presented) The apparatus of claim 79 wherein the first fluid plenum substantially circumscribes the second nozzle.

81. (Previously Presented) The apparatus of claim 73, wherein the first nozzle has inner and outer surfaces, each being substantially frustoconical in shape at the first fluid outlet wherein the inner surface of the first nozzle faces outward away from the apparatus axis and the outer surface of the first nozzle faces inward toward the apparatus axis.

82. (Previously Presented) The apparatus of claim 73 wherein the first nozzle substantially circumscribes the second nozzle.

83. (Previously Presented) The apparatus of claim 73, wherein the internal geometry of the second nozzle has an exit area to throat area ratio in the range of 1.75 to 15.

84. (Previously Presented) The apparatus of claim 73, wherein the second nozzle has an included angle alpha (α) that is equal to or less than 6 degrees.

85. (Previously Presented) The apparatus of claim 73, further comprising within the apparatus a mixing chamber, wherein the first fluid outlet and the second fluid outlet are connected to the mixing chamber.

86. (Previously Presented) The apparatus of claim 73, wherein the second nozzle has an included angle alpha (α) that is equal to or less than 12 degrees.
87. (Previously Presented) The apparatus of claim 73 wherein the second nozzle is shaped with a convergent-divergent profile to provide supersonic flow of a second fluid which flows therethrough.
88. (Previously Presented) A spray system comprising the apparatus of claim 73 and further including a steam generator and a water supply, wherein the second fluid is steam and the first fluid is water.
89. (Previously Presented) A method of suppressing a fire comprising using the apparatus of claim 73 to spray water droplets on the fire.